IN THE SPECIFICATION

Please amend the specification as indicated below. A redlined version of the amended paragraphs is attached to this response as Appendix B.

Please replace the paragraphs identified below with the following amended paragraphs:

Page 1, the Paragraph beginning with the words "In IS-95..."

A2

In IS-95 communications systems channels of information transmitted from a common base station are distinguished from one another by orthogonal spreading codes. Each channel is spread by a unique orthogonal spreading sequence. The channels that are transmitted by an IS-95 base station include, a pilot channel, a sync channel, at least one paging channel and dedicated traffic channels. The pilot channel is used to provide a phase reference for coherent demodulation of the other channels by mobile stations within the coverage area of the base station. The sync channel carries overhead information such as timing information, pilot PN offset information and other information that allows the reception of the other overhead channels. The paging channel notifies mobile stations of mobile terminated calls directed to the mobile station in the area. Dedicated traffic channels provide information directed to the user of a specific mobile station in the coverage area of the base station.

Page 5, the Paragraph beginning with the words "The present invention..."

A3

The present invention is a novel and improved method and apparatus for transmitting broadcast information in a multi-carrier communication system. The proposed invention is to send the Sync Channel of the multi-carrier system in a 1.25 MHz channel bandwidth (i.e., over a single carrier), and to specify the preferred channels for the Sync Channel transmission instead of the preferred channels for the entire multi-carrier system. The Sync Channel Message will indicate the center

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frequency for a multi-carrier system in the band if one exists and the frequency of a single band system if one exists.

Page 5, the Paragraph beginning with the words "Considering the A block..."

A4

Considering the A block of the PCS band again, the preferred channels for Sync Channel transmission can be selected as channels 75, 150 and 225. This selection ensures that one of the preferred channels will always be used by any multi-carrier system regardless the location of its center channel. The mobile station, upon powering up, searches on the preferred channels for Sync Channel first. Once the pilot signal is acquired on any of these channels, the mobile station demodulates the Sync Channel on the channel as well. The mobile station learns from the Sync Channel Message the location of a multi-carrier and a single carrier system in the band if either exists. It can be easily observed that the number of channels to search and the number of hypotheses to try are significantly reduced by using the proposal in this disclosure. As a result, it improves the mobile station's initial acquisition time.

Page 7, the Paragraph beginning with the words "FIG. 2 illustrates..."

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FIG. 2 illustrates the possible center bands of a three component multi-carrier communication system as is contemplated in cdma2000 (also referred to as IS-2000). In the multi-carrier communication system, the mobile station tunes to each possible grouping of three adjacent channels and attempts to receive the Sync Channel message. In the current designs for multi-carrier systems the Sync Channel message will be divided into three component parts with each component part transmitted separately and simultaneously on a different carrier of the multi-carrier band. The mobile station first attempts to receive the Sync Channel message on a multi-carrier system comprising bands **300b**, **300c**, **300d**. If unsuccessful, the mobile station then attempts to acquire the Sync Channel on a multi-carrier system consisting of bands **300c**, **300d**, and **300e**. This continues for each possible three band system until the mobile station checks for a multi-carrier system consisting of bands **300h**, **300i** and **300j**. For reasons described above, in the exemplary embodiment, bands **300a** and **300k** will not be used in a multi-carrier system.

Page 8, the Paragraph beginning with the words "In the present invention..."

In the present invention, the mobile station tunes to a preferred channel (**300c**, **300f** or **300i**) and attempts to detect a pilot signal on that frequency band. If a pilot signal is detected the mobile station receives, demodulates and decodes the Sync Channel message. In the present invention, the Sync Channel message will provide information that identifies the center frequency of a multi-carrier system in the current set of frequency bands (if one exists) and the frequency of a 1x band in the current set of frequency bands (if one exists).

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Page 8, the paragraph beginning with the words "If the mobile station..."

If the mobile station selects to operate in a single band system, the mobile station uses the information received in the Sync Channel message to tune to the appropriate frequency of the single band system. The mobile station then receives the general paging channel message on the primary paging channel. The general paging channel message provides the number of paging channels used by the single band system. The mobile station uses a predetermined hashing function to determine the code channel upon which the mobile station will receive paging messages for the transmitting base station.

A7

Page 8, the paragraph beginning with the words "The present invention..."

The present invention is equally applicable to systems that may include 3X direct spread communications systems. In this embodiment, the Sync Channel message would include the additional information whether the 3X system is a direct spread system or a multi-carrier system. In addition, the Sync Channel message may also provide information respecting whether the system uses a form of diversity transmission such as orthogonal transmit diversity (OTD). If methods of transmission diversity are possible in the multiple bandwidth communication system, specification of the means of transmit diversity greatly reduces the number of hypotheses that must be tested to acquire a system.

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Page 9, the Paragraph beginning with the words "FIG. 3 is a..."

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FIG. 3 is a flowchart illustrating the acquisition operation of the present invention. In block **2**, the mobile station tunes to a preferred channel (**300c**, **300f** or

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300i). It will be understood that the present invention is disclosed in context of the PCS band of frequencies and can easily be extended to other bands such as the cellular band. Moreover, the selected set of preferred channels though preferred for three carrier, multi-carrier communications systems would be different for multi-carrier systems with a different number of carriers.

Page 10, The Paragraph beginning with the words "FIG. 4 introduces..."

A10

FIG. 4 introduces the elements and nomenclature of a very simplified wireless communications system. Base station 30 transmits forward link signal 32 to mobile station 40. Mobile station 40 transmits reverse link signal 34 to base station 30.

Page 11, The Paragraph beginning with the words "FIG. 5 is simplified..."

A11

FIG. 5 is simplified block diagram illustrating the exemplary embodiment of base station 30 as multi-carrier CDMA transmission system with three forward link channels. Each of transmission subsystems 48 transmits a portion of forward link signal 32 on a different carrier frequency. Transmission subsystem 48a transmits a portion of forward link signal 32 on frequency f_1, transmission subsystem 48b transmits a portion of forward link signal 32 on frequency f_2, and transmission subsystem 48c transmits a portion of forward link signal 32 on frequency f_3.

Page 11, the Paragraph beginning with the words "The data for transmission..."

A12

The data for transmission on forward link signal **32** is provided to de-multiplexer **50**. De-multiplexer **50** provides the data to one of the three transmission subsystems **48**. The present invention is described in terms of a three carrier multi-carrier communication system because three IS-95 carriers each occupying 1.2288 MHz can fit into a 5MHz band. However, it will be understood by one skilled in the art that the teachings of the present invention can easily be extended to an arbitrary number of channels in a multi-carrier system.

Page 11, the Paragraph beginning with the words "The de-multiplexed data..."

A13

The de-multiplexed data streams are provided to modulators **52**. In the exemplary embodiment, modulators **52** modulate the forward link data in accordance with a CDMA modulation format such as that described in the IS-95 standard and described in detail in the aforementioned U.S. Patent No. 5,103,459. The forward link data includes dedicated channel data that is for provision to a specific mobile station and broadcast channel data that is for provision to all mobile stations in the coverage area of base station **30** or a subset of mobile stations **40** in the coverage area of base station **30**. The Sync Channel message is an example of broadcast data that is transmitted to all mobile stations in the coverage area of base station **30**. In the present invention, the Sync Channel message is provided to a designated one of transmission subsystems **48** for transmission on a designated one of the three carriers.

Page 12, the Paragraph beginning with "In the exemplary embodiment..."

A14

In the exemplary embodiment, the Sync Channel message is distinguished from other channels of information by being spread by a unique orthogonal spreading sequence W_{sync}. In the preferred embodiment of the present invention, the sync channel message is only transmitted by a selected one of modulators **48a**, **48b** or **48c**. The selected modulator **48** transmits the Sync Channel message on a preferred channel. In the exemplary embodiment, the Sync Channel message indicates the center frequency of a multi-carrier system in the current band of frequencies, in one exists, and the frequency of a single carrier system in the current set of frequency bands, if one exists.

Page 13, the Paragraph beginning with the words "The Sync Channel..."

A15

The Sync Channel message is provided to message formatter **64**. In the exemplary embodiment, message formatter **64** generates a set of cyclic redundancy check (CRC) bits and an optional set of tail bits and appends those bits to the Sync Channel message. IS-95 systems do not append tail bits to the Sync Channel message. cdma2000 (also referred to as IS-2000) systems append eight tail bits to the Sync Channel message. The Sync channel message with the CRC bits and tails bits appended is provided to encoder **66**. Encoder **66** encodes the sync

Cont A15

channel message, CRC bits and tail bits in accordance with a predetermined forward error correction coding algorithm such as convolutional coding.

Page 13, the Paragraph beginning with the words "The reordered symbols..."

A16

The reordered symbols are provided to Walsh spreader **70** which spreads the reordered symbols in accordance with a predetermined code sequence W_{sync}. In the exemplary embodiment, W_{sync} is a code sequence that is orthogonal to all other code sequences used to channelize the channels of forward link signal **32**. The Walsh spread signal is then provided to complex PN spreader **62** and is spread as described above.

Page 13, the Paragraph beginning with the words "Common channel messages..."

A17

Common channel messages are transmitted to all subscriber stations or sets of subscriber stations within the coverage area of base station **30**. Examples of common channel messages include paging messages that alert mobile stations of incoming calls and control channel messages that provide necessary control information to mobile stations in the coverage area of base station **30**. For illustration purposes a single control channel is shown. It will be understood by one skilled in the art that in practical implementations a plurality of control channels will be transmitted a base station **30**.

Page 13, the Paragraph beginning with the words "The Common Channel message..."

A18

The Common Channel message is provided to message formatter **74**. In the exemplary embodiment, message formatter **74** generates a set of cyclic redundancy check (CRC) bits and a set of tail bits and appends those bits to the Common Channel message. The Common Channel message with the CRC bits and tails bits appended is provided to encoder **76**. Encoder **76** encodes the Common Channel message, CRC bits and tail bits in accordance with a predetermined forward error correction coding algorithm such as convolutional coding.

Page 14, the Paragraph beginning with the words "The reordered symbols..."

The reordered symbols are provided to Walsh spreader **82** which spreads the reordered symbols in accordance with a predetermined code sequence W_{cc}. In the exemplary embodiment, W_{cc} is a code sequence that is orthogonal to all other code sequences used to channelize the channels of forward link signal **32**. The Walsh spread signal is then provided to complex PN spreader **62** and is spread as described above.

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Page 14, the Paragraph beginning with the words "The reordered symbols are provided to Walsh spreader 90..."

The reordered symbols are provided to Walsh spreader **90**, which spreads the reordered symbols in accordance with a predetermined code sequence W_T. In the exemplary embodiment, W_T is a code sequence that is orthogonal to all other code sequences used to channelize the channels of forward link signal **32**. The Walsh spread signal is then provided to complex PN spreader **62** and is spread as described above.

A20

Page 15, the Paragraph beginning with the words "The forward link signal..."

The forward link signal **32** is received at antenna **100** and provided to receivers **102**. Each of receivers **102a**, **102b** and **102c** down convert, filter and amplify the received signal in accordance with a different frequency f_1, f_2, or f_3, respectively. The down converted signals are provided to demodulators **104**. In the exemplary embodiment, demodulators **104** demodulate each of the down converted signals in accordance with a code division multiple access (CDMA) modulation format. The implementation of demodulators **104** is described in detail in the aforementioned U.S. Patent No. 5,103,459. The demodulated components of forward link signal **32** are provided to multiplexer (MUX) **106** which re-assembles the transmitted data stream

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Page 15, the Paragraph beginning with the words "In the present invention..."

A22

In the present invention, mobile station **40** initially only uses a single receiver **102** and demodulator **104** to demodulate the Sync Channel. Mobile station **40** tunes a selected receiver **102** to a preferred channel (**300c**, **300f** or **300i**) and attempts to acquire the pilot signal at the preferred channel frequency using a corresponding one of demodulators **104**. If sufficient correlation energy is detected, the acquisition is declared to be successful. The mobile station then still only down converting at the single frequency, demodulates, de-interleaves and decodes the Sync Channel message. From the Sync Channel message, mobile station **40** determines the center frequency of a multi-carrier system in the current frequency bands, if one exists, and the frequency of a single carrier system in the current frequency bands, if one exists.

Page 15, the Paragraph beginning with the words "Mobile station **40**..."

A23

Mobile station **40** decides whether it will operate in a multi-carrier mode or a single carrier mode. If mobile station **40** decides to operate in a multi-carrier mode, then mobile station **40** activates the RF circuitry additional receivers **102**, tuning to the appropriate set of frequencies indicated in the Sync Channel message and begins to receive the forward link signal on a plurality of carrier frequencies. If mobile station **40** decides to operate in a single-carrier mode, then mobile station **40** tunes to the appropriate frequency indicated in the Sync Channel message and begins to receive the forward link signal on a single carrier frequency band.

Page 16, the Paragraph beginning with the words "Control processor **128**,,,"

A24

Control processor **128** provides offset hypotheses to complex PN despreader **112**. Complex PN despreader **112** despreads the received signals in accordance with the PN offset hypotheses provided by control processor **128** as well as W_{pilot}. The received signal is despread in accordance with the PN offset hypothesis and the resultant signal is provided to pilot filter **114**. Pilot filter **114** despreads the signal from complex PN despreader **112** in accordance with an orthogonal sequence W_{pilot} and low pass filters the result of complex despreader **112**. In the exemplary embodiment, the Walsh sequence comprising of all 1's is used to channel the pilot signal.

Page 16, the Paragraph beginning with the words "The resultant signals..."

A25

The resultant signals from pilot filter **114** are provided to energy detector **118** which sums the squares of the resultant samples from pilot filter **114** to provide a received pilot energy value. The received pilot energy value is provided to control processor **128**, where it is compared to a predetermined threshold value. If the computed energy exceeds the threshold acquisition is declared to be successful and the mobile station begins to receive the Sync Channel message. If the energy falls below the threshold value, then the acquisition is declared unsuccessful and the next PN hypothesis is provided by control processor **128** to complex PN despreader **112**. The method and apparatus for searching PN offsets in a CDMA communication system is described in detail in U.S. Patent No. 5,644,591, entitled "Method And Apparatus For Performing Search Acquisition In A CDMA Communication System", which is assigned to the assignee of the present invention and incorporated by reference herein. If, after exhausting the possible PN offset hypotheses, the received pilot energy fails to exceed the threshold value, then control processor sends message to receiver **102** to begin down converting the received signal at a different preferred frequency channel.

Page 17, the Paragraph beginning with the words "The PN despread..."

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The PN despread signal is also provided to Walsh despreader **116**. Walsh despreader **116** despreads the received signal in accordance with a Walsh code sequence W_{chan}. When demodulating the Sync Channel, the W_{chan} is Walsh sequence allocated for the transmission of the Sync Channel message. Walsh despreader **116** despreads the signal components in accordance with the orthogonal sequence W_{chan} and provides the result to dot product circuit **120**.
As forward link signal **32** traverses the propagation path to mobile station **40**, an unknown phase component is introduced into the received signal. Dot product circuit **120** computes the projection of the received signal onto the received pilot signal to provides a scalar result without the phase errors. The implementation of dot product circuits for coherent demodulation are well known in the art and a method and apparatus for performing the dot product procedure is described in detail in U.S. Patent No. 5,506,865, entitled "Pilot Carrier Dot Product Circuit" which is assigned to the assignee of the present invention and is incorporated by reference herein.